RP

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RP:0113

Mr. James Ikeda, Acting Chief
Environmental Protection and
Health Services Division
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Ikeda:

Zone of Mixing Permit (ZM 263)
Pacific Sea Farms, Inc.
Kahuku Point, Oahu

The proposed action involves the discharge of aquaculture effluent into class A waters near the abandoned Kahuku Airfield through an open channel. This is a renewal of a permit granted in 1984 to Marine Culture Enterprises, previous operators of a shrimp raising farm at the same location. The current ZOM permit expires October 31, 1989. The Environmental Center has reviewed the above referenced document with the assistance of Keith Chave and Francis Sansone, Oceanography; and Carolyn Cook, Environmental Center. Our reviewers have suggested that the following issues be taken into consideration.

Appropriate renewal : Should a new permit be required?

EPA Application 3510-1 (Rev. 10-80) indicates that Pacific Sea Farms intends to raise a maximum of 1,000,000 pounds of Penaeus vannamei shrimp and 100,000 pounds of Tilapia sp. annually. Also, developmental work with other organisms "such as algae culture, clams, and oysters" is planned. The previous ZOM permit was granted to Marine Culture Enterprises (MCE) for the culture of Penaeus stylirostris shrimp. According to the DOH Discharge Monitoring Report (DMR), discharge of effluent was discontinued when MCE ceased their operations in June 1988. Pacific Sea Farms began to discharge effluent from new operations on July 19, 1989. Since different organisms are being cultured, and since ownership and responsibility for the aquaculture activities at this site have changed, a renewal of the existing ZOM does not seem appropriate. We recommend that the requested permit be processed as a new application.

1984 ZOM permit application compared to 1989 application

It would be helpful to know when and under what circumstances the effluent water quality measurements shown in Appendix A of these applications were conducted. The August 1989 NPDES Monitoring Report of the effluent (sampled 27 July and 02 August 1989) does not contain the same figures recorded in the new ZOM permit application, nor does it contain the same figures as the 1984 ZOM permit. A summary table of the values from each date would greatly facilitate an informed review and evaluation of the significance of the data provided. Do the values in Appendix A reflect the geometric mean of samples taken?.

The location of the monitoring site for values shown in Appendix A is not clear. In order to compare recent measurements with previous records and with the ZOM parameters, it is essential that the sampling sites remain consistent and that the volumes of effluent are clearly quantified. Clarification of sampling sites and volumes of discharge should be considered prior to issuance of a ZOM permit.

The turbidity value in the 1984 permit is recorded as 14.9 NTU, whereas the turbidity in renewal application is 2 NTU. Is this due to a present low discharge rate? Will it increase if PSF increases the discharge rate? Dissolved oxygen in the 1984 application is "near saturation", whereas in the new application it is recorded as 50-70% saturation. Copper content recorded in the current application (0.01 mg/l) is less than that of the 1984 document (0.03).

It is evident, even though there is a difference in analytic measure of nitrogen, that the new standards (TKN = 4.0 mg/l) are somewhat more lax than the previous limits of 2.6 mg/l for total N (TKN plus nitrate/nitrite). Total Phosphorous as per the 1984 application is 0.40 mg/l and on the renewal application it is 0.5 mg/l, slightly exceeding the 1984 parameters for water quality.

The existing permit does not cite odor as a having an effect on the physical quality of the water whereas the 1989 application does.

Benthic community monitoring

We note that in 1985, a survey of the macrobenthos and fishes was conducted by AECOS in the area of the aquaculture effluent discharge. Periodic surveys of this kind should be continued to facilitate long term assessment of the impact of the discharge on the biological community and total ecosystem in the Zone of Mixing. In the future, if Pacific Sea Farms wishes to increase their discharge, the most reliable data available for making predictions as to the potential effects of such discharges will be the benthic community monitoring reports.

Additional comments

The decision to stop monitoring formaldehyde is acceptable, assuming that it is no longer being used in the opperations.

If developmental work is to be carried out with algae, it is possible that this would help to decrease nutrient levels in the effluent.

We note that the DOH administrative rules as set forth in Title 11, Chapter 54-09 (7) state that any renewal application shall be made at least 180 days prior to the expiration of the zone of mixing. The present application does not meet that time schedule.

Thank you for the opportunity to comment on this ZOM permit application. We hope that our comments will be helpful in making your decision.

Yours truly

for Jacquelin Miller
Associate Environmental Coordinator

cc: OEQC
Clean Water Branch, DOH
L. Stephen Lau
Keith Chave
Francis Sansone
Carolyn D. Cook